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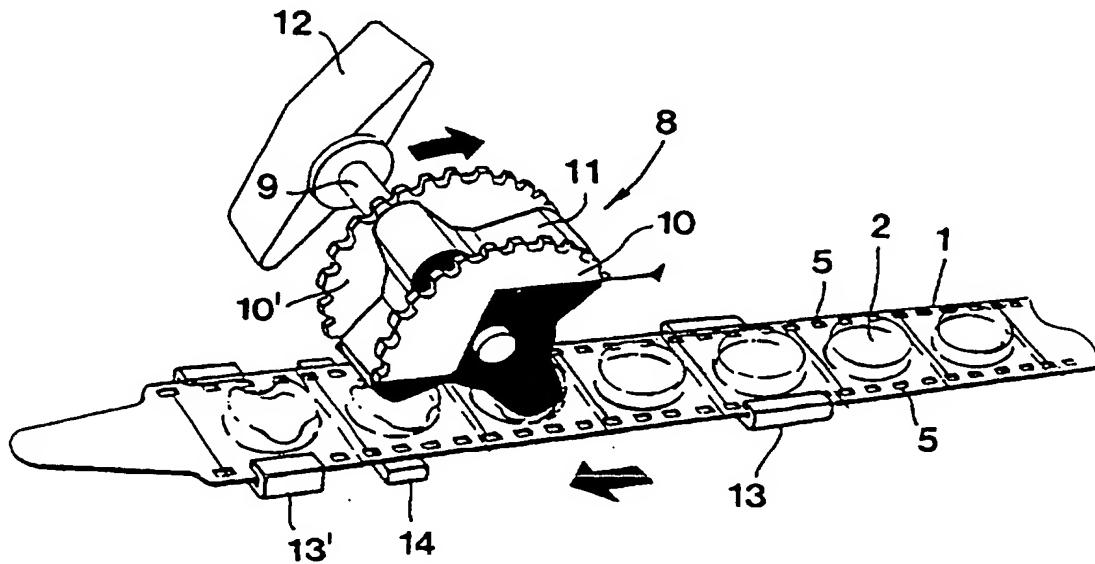
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## (54) Title: PACKAGE FOR TABLETS OR THE LIKE AND EJECTOR DEVICE THEREFOR



## (57) Abstract

A package for tablets, pills or the like comprises a flexible carrier (1) having a number of protruding cups (2), each one of which housing at least one tablet which is releasable by compressing the individual cup while demolishing a bottom thereof. The carrier is in the form of a long narrow strip (1) provided with holes or other means (5) which are mechanically grippable by an ejector device designed to co-operate with the package, which device includes members (11) to execute mechanical compression of the cups (2) of the strip by linear tension of the strip.

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## PACKAGE FOR TABLETS OR THE LIKE AND EJECTOR DEVICE THEREFOR

Technical Field of the Invention

In a first aspect, this invention relates to a package for tablets or the like, which comprises a flexible, web-shaped carrier having a number of protruding cups, each one of which housing at least one tablet which is releasable by compressing the individual cup while demolishing a bottom thereof.

10 Background of the Invention and Prior Art

Not only in medical services and geriatric care, but also in private households, medicine in the form of tablets or other solid bodies, such as pills, capsules and the like, is stored and administrated by means of packages of the above-mentioned general kind. In comparison with random storing of a larger quantity of tablets in bottles or boxes, such storing offers the advantage that the handling of the tablets becomes hygienic. Thus, the individual tablets may be long-time-stored individually separated without the need of being touched in association with the administration of other tablets, i.e. the real consumer is guaranteed that nobody else has previously been in contact with the individual tablet when it is to be consumed. Furthermore, the individual tablets are sealed hermetically tight in the appurtenant cups, whereby said tablets are protected from any damaging outer influence, e.g. by dirt, moisture and the like.

Previously known packages of the kind in question have the form of cards having a highly varying number of cups and tablets. The card often comprises two or more rows of cups having a larger number (e.g. 5-10) of cups in each row. The card or carrier may in practice be composed of an upper layer of transparent plastic in which the cups are formed integrally with the plastic layer as a whole, as well as a lower foil, e.g. an aluminium foil, applied against the bottom side of the plastic layer. When the individual plastic cup is pressed down the foil gives way, whereby the tablet sealed in the cup may be released.

However, an annoying disadvantage of the known packages is that sick, weak-sighted and/or disabled people may have dif-

5 ficulties in opening the cups and releasing the tablets. This is particularly the case when the tablets and the cups are small, but also when the cups are large e.g. inferior strength and/or motor activity in the fingers of the hand, perhaps in combination with weak sight, may lead to considerable difficulties in effectively compressing a specific, individual cup. With the purpose of rectifying said problem, there has previously been developed particular auxiliary tools in the form of 10 pliers having male and female-shaped jaws which, when squeezed together, will press down the cup and release the tablet. However, also said tools require a good fine motor ability and strength of the user.

#### Objects and Features of the Invention

15 The present invention aims at obviating the above-mentioned disadvantages of previously known packages in the form of cards and, by providing a completely new package in combination with an ejector device specially adapted therefor, overcome the difficulties of disabled people to release the tablets. Thus, a primary object of the invention is to create a 20 new package for tablets which, in combination with the special ejector device, enables a particularly simple and reliable release of individual tablets from the package. Another object is to create a package which admits storing of large quantities 25 of tablets, e.g. in particular automatic machines.

According to the invention, at least the primary object is attained by the features defined in the characterising clause of claim 1. Preferred embodiments of the package according to the invention are furthermore defined in the dependent 30 claims 2-5.

In claim 6, an ejector device specially developed for the package according to the invention is defined. Preferred embodiments of said device are furthermore defined in the dependent claims 7-10.

Brief Description of the Appended Drawings

In the drawings:

Fig 1 is a partial exploded view illustrating a package according to the invention, a bottom part being shown separated from a top part,  
5  
Fig 2 is an enlarged cross-section through the composed package,  
Fig 3 is a schematic perspective view showing the package in connection with an ejector device according to the  
10 invention,  
Fig 4 is a similar perspective view showing an alternative embodiment of the ejector device,  
Fig 5 is a perspective view of a third alternative, and  
Fig 6 is an end view of a fourth alternative embodiment.

15

Detailed Description of Preferred Embodiments of the Invention

In fig 1 and 2, reference numeral 1 generally designates a flexible carrier from the top side of which a plurality of cups 2 protrude and on the bottom side of which a foil 3 is applied. For every cup, the foil 3 forms a bottom which retains a tablet 4 in the cup. According to the invention, the carrier 1 has the shape of a long narrow strip in which holes 5 are provided, which holes are mechanically grippable by an ejector device designed to co-operate with the package, which device is illustrated in four different versions in figures 3 to 6.

In the shown, preferred embodiment, the grip holes 5 are placed in two mutually separated rows 6, 6' on each side of the cups 2, suitably immediately adjacent to the long side edges of the strip 1. The holes are most suitably through holes and have such a form, size and mutual location that they may be gripped by gears included in the ejector device according to the invention. In practice, the holes may be of a rectangular form as indicated in the drawings.

Weakened portions 7, e.g. in the form of folding lines, are formed between adjacent cups 2 of strip 1, the purpose of which portions is to facilitate winding the strip to a roll. In practice, the strip 1 may be made of a relatively stiff, although at the same time elastically resilient plastic, e.g. PVC-plastic, which advantageously is transparent. The foil 3 on

the bottom side of the carrier strip 1 may advantageously, in a known way, consist of an aluminium foil. In the example according to fig 1, the strip is shown comprising one single row of cups. As a minimum, said row should comprise 30 à 50 5 cups, although it also conceivable per se to make the strip with considerably more cups. By the existence of the folding lines 7, also relatively stiff strip may be wound to rolls which are easy to store, e.g. in a capsule or in special automatic machines for feeding out the strip.

10 Reference is now made to fig 3 which illustrates an ejector device according to the invention in its entirety designated 8. Said device comprises a rotatable shaft 9 to which two gears 10, 10' are stiffly connected, the cogs or teeth of which may mechanically grip into the holes 5 of the strip 1. 15 Furthermore, a number of ejector members 11 are rigidly connected to the shaft 9, which members are mutually peripherally separated with an arc length, in the main, corresponding to the linear centre distance between adjacent cups 2 of the strip 1. In the preferred embodiment according to fig 3, the number of 20 ejector members 11 amounts to four, the members being formed in a common body, e.g. of plastic. In practice, the number of ejector members should amount to 3-5. A knob or handle 12 being of a considerable size and being easy to grip is also rigidly connected to the shaft 9.

25 Furthermore, two guide elements 13, 13' for guiding the strip 1 are arranged under the ejector device 8. There is also a stripper element 14 in the area between said guide elements, more precisely downstream each downwardly directed ejector member.

30 The described device functions in the following way. When the strip 1 has been applied in the guide elements 13, 13' and the cogs of the two gears 10, 10' have been brought into engagement with the holes 5 in the strip, the strip will be submitted to a linear feeding movement when the shaft 9 is 35 rotated. In case said rotation is limited to a quarter of a revolution, the individual ejector member 11 will be moved a quarter of a revolution from an upper starting position to a lower position in which said member compresses an individual cup 2 so that the tablet 4 in question is pressed through the

bottom formed by the lower foil 3, the tablet being released from the package. In case the foil 3 would only be partly demolished and the tablet remains hanging in the same strip, the subsequent stripper element 14 guarantees that the tablet

5 is safely released from the strip.

In fig 4 an alternative embodiment is shown according to which an ejector member 15 is separated from two gears 10, 10' arranged on a shaft 9. In this case, the ejector member has the form of a wedge-shaped clamp body which is included in a guide 10 element 13" for guiding the strip 1. When the strip is submitted to a linear movement by means of the gears, the individual cup will be compressed by the clamp body 15 and the tablet may be released via a hole in the bottom side of the guide element 13".

15 In fig 5 a third, alternative embodiment is shown which, in all essentials, correspond to the embodiment according to fig 3. However, in this case, the four individual ejector members 11 have been replaced by one single ejector member in the form of a cylindrical roller 16 which co-operates with an 20 existing abutment under the roller, e.g. in the form of the stripper 14. When the gears 10, 10' submit the strip 1 to a linear feeding movement, the individual cup 2 is pressed in between the roller 16 and the stripper 14 so that said cup is successively compressed while releasing the appurtenant tablet.

25 It should be noted that the gear 10 in fig 5 is shown separated from the roller 16.

The embodiment shown in fig 6 is similar to the embodiment according to fig 5, but in this case the roller 16' between the gears 10, 10' has been made with a relatively thin 30 peripheral portion 17 which transforms into a thicker hub portion 18.

In practice, the ejector device according to the invention may be realized in many different ways. Said device may, e.g., be included in a capsule in which a package strip in a 35 roll form also is stored. Furthermore, it is possible to make the ejector device as a separate dispenser to which replaceable package strips may be separately associated. Also, the device may be included in a larger automatic machine for feeding out several strips.

Feasible Modifications of the Invention

The invention is not solely restricted to the embodiments described above and shown in the drawings. Thus, it is conceivable to use a motor, e.g. an electric motor, instead of a manually actuatable knob, for driving the ejector device. Furthermore, it is feasible to make the package strip with the cups in two rows beside each other, only one row of holes for co-operation with a gear being possible to arrange between the rows of cups. It should also be emphasized that other mechanically grippable means than holes may be used for the requisite co-operation with one or more gears. Thus, it is possible to make protruding projections on the package strip between which the cogs of the gears may engage. In this connection, it should also be pointed out that the term "gear" should be interpreted in its widest sense inasmuch as also such elements as teeth, pins or pegs may fulfil the same purpose as cogs. Although the claims as well as the preceding description only refer to tablets, it is evident that the package according to the invention may also be used for storing other bodies, such as pills, medicine capsules and the like. Therefore, the invention is in no way limited in respect of the contents of the package strip.

Claims

1. A package for tablets or the like, comprising a flexible, web-shaped carrier (1) having a number of protruding cups (2), each one of which housing at least one tablet (4) which is releasable by compressing the individual cup while demolishing a bottom (3) thereof, characterized in that the carrier is in the form of a long narrow strip (1) provided with means (5) which are mechanically grippable by an ejector device designed to co-operate with the package, which device includes members (11, 15, 16) to execute mechanical compression of the cups (2) of the strip by linear tension of the strip.
2. Package according to claim 1, characterized in that said grip means (5) are placed in two mutually separated rows (6, 6') on each side of said cups (2).
3. Package according to claim 1 or 2, characterized in that the grip means consists of through holes (5) recessed in the strip with the purpose of receiving cogs in gears (10, 10') included in said ejector device.
4. Package according to any one of the preceding claims, characterized in that the strip (1) has one single row of cups (2) in a number of at least 30, suitably at least 50.
5. Package according to any one of the preceding claims, characterized in that weakened portions (7), e.g. folding lines, are formed between adjacent cups (2) of the strip (1) to facilitate winding the strip to a roll.
6. Ejector device for releasing tablets from the package strip according to any one of the preceding claims, characterized in that said device comprises a rotatable shaft (9) to which at least one gear (10, 10') is rigidly connected, the purpose of which gear being to grip the grip means (5) of the strip in order to linearly feed the strip, and at least one ejector member (11, 15, 16) which, at linearly feeding the

strip, guarantees compression of the individual cup while releasing the tablet therein.

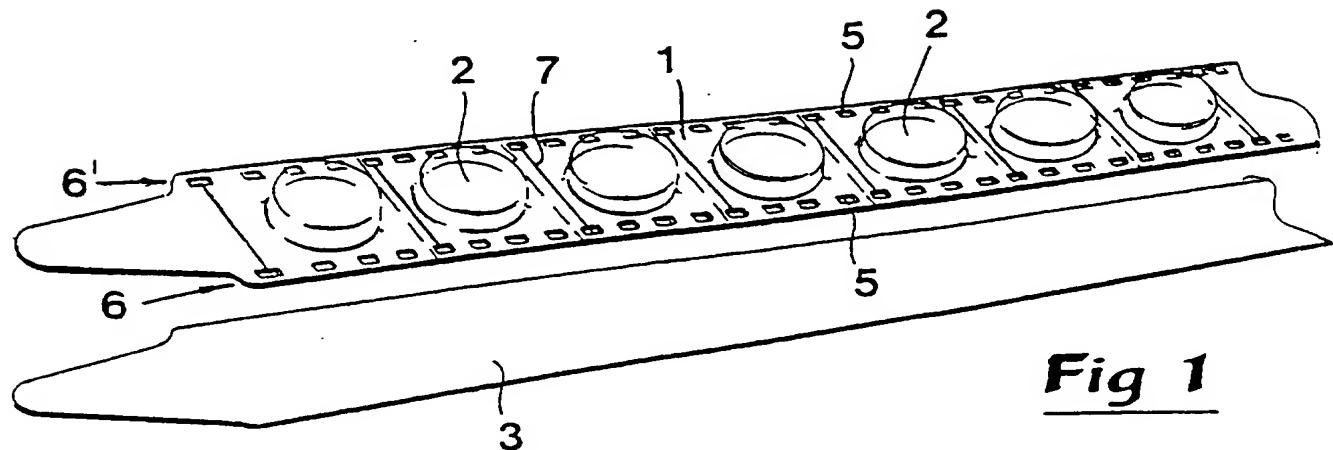
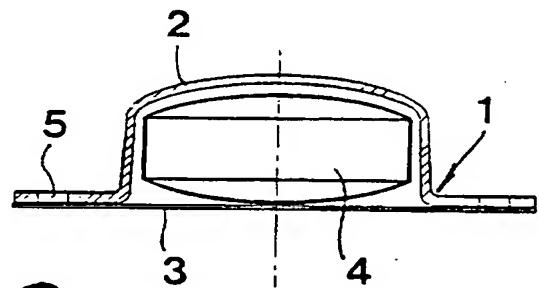
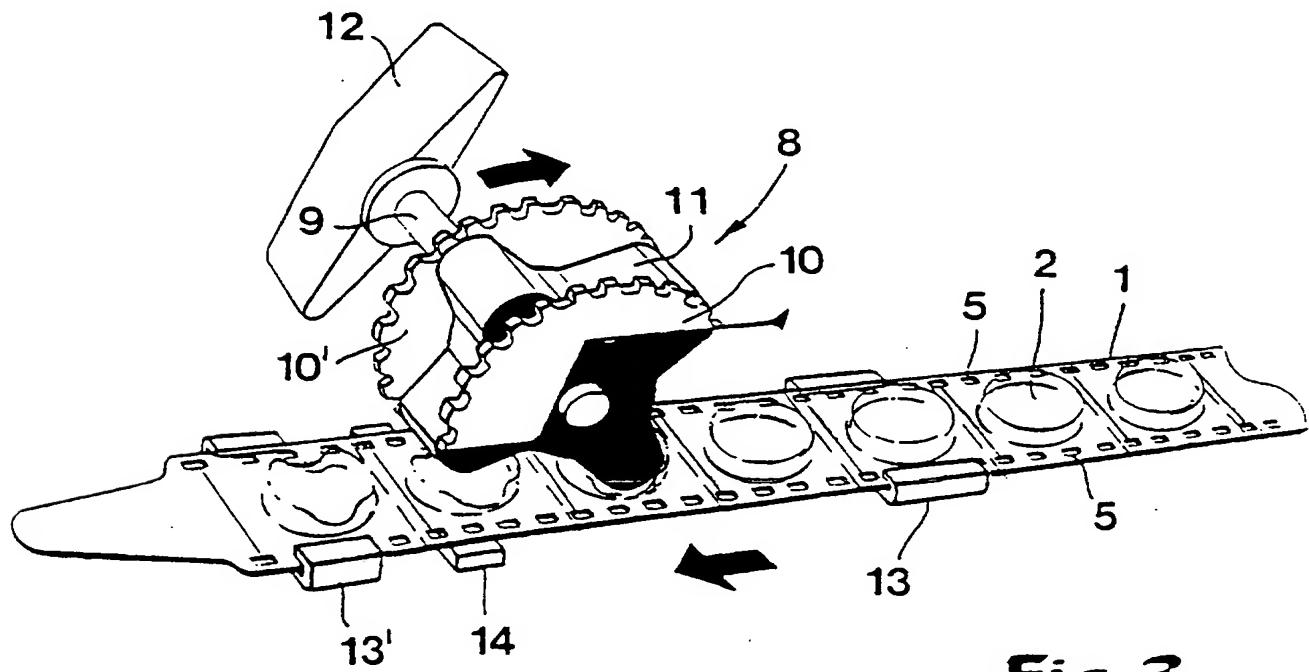
7. Ejector device according to claim 6, characterized in that a plurality of ejector members (11) are rigidly connected to the shaft (9), which members are mutually peripherally separated with an arc length, in the main, corresponding to the linear centre distance between adjacent cups (2) of the strip (1).

10 8. Ejector device according to claim 6, characterized in that the ejector member consists of a roller (16).

15 9. Ejector device according to any one of claims 6-8, characterized in that two mutually separated gears (10, 10') are connected to the shaft, between which gears the ejector members (11, 16) are arranged.

20 10. Ejector device according to any one of claims 6-9, characterized in that a knob (12) for manual rotation of the shaft (9) together with the appurtenant gear (10, 10') is rigidly connected to the shaft (9).

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Fig 1Fig 2Fig 3

2 / 2

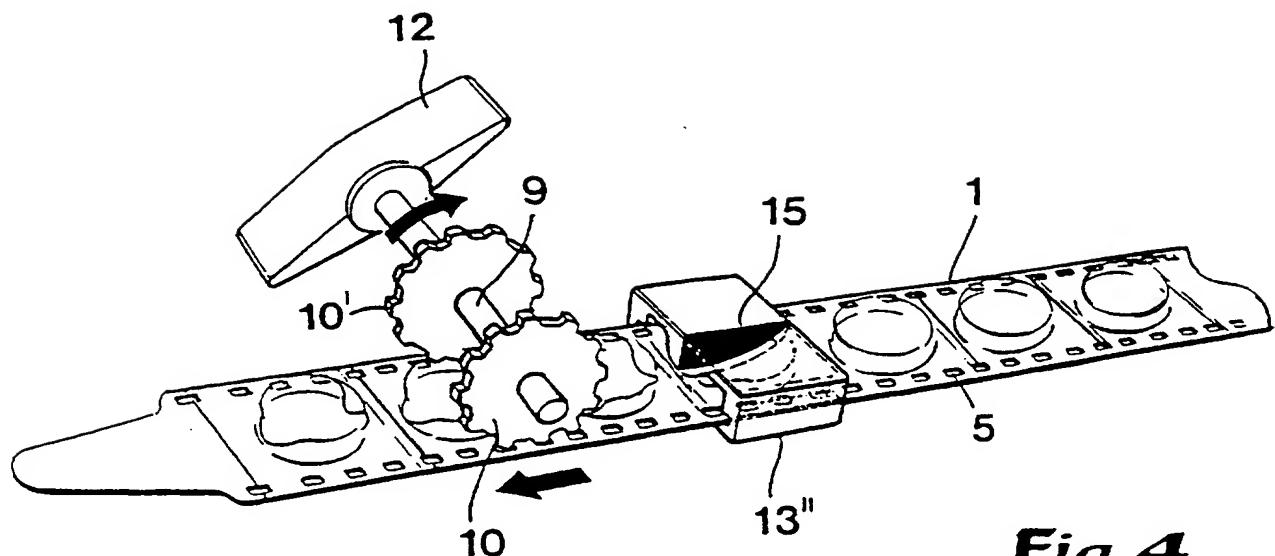


Fig 4

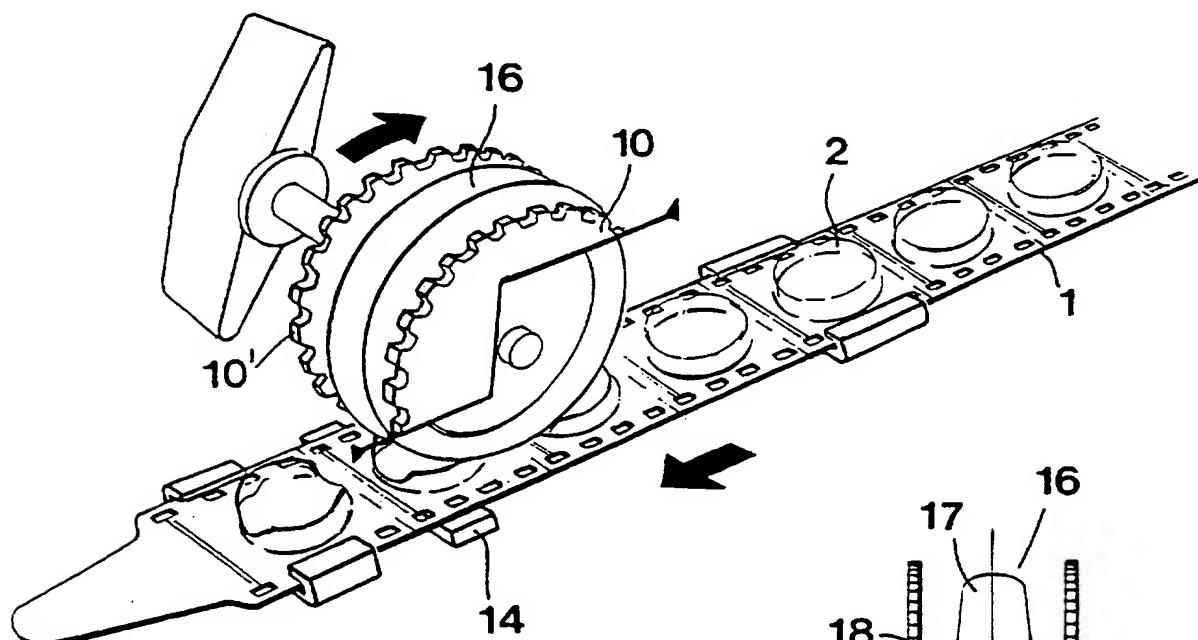


Fig 5

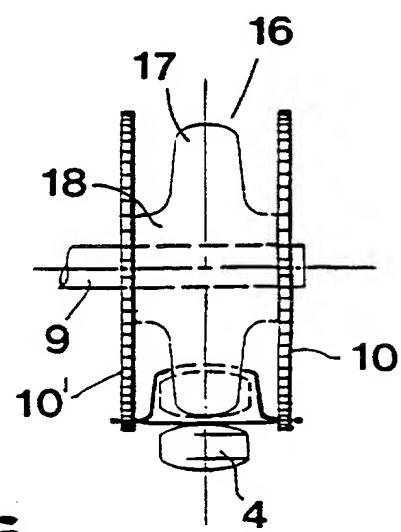


Fig 6

## INTERNATIONAL SEARCH REPORT

1

International application No.

PCT/SE 97/00045

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65D 83/04, B65B 69/00

According to International Patent Classification (IPC) or to both national classification and IPC

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5332096 A (BATTAGLIA), 26 July 1994 (26.07.94), figures 5-8 --	1,6
A	US 5348158 A (HONAN ET AL), 20 Sept 1994 (20.09.94), figures 1,2,6 --	1,6
A	Patent Abstracts of Japan, Vol 13, No 369, M-860, abstract of JP,A,1-124539 (HISATOSHI SONOBE), 17 May 1989 (17.05.89) --	1,6
A	CH 677346 A5 (MARCUS DIAMANT ET AL), 15 May 1991 (15.05.91), figures 1,2 --	6

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/04/97	International application No. PCT/SE 97/00045
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